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10/567,374	02/07/2006	Daniele Androni	05788.0386	1188

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EXAMINER	
DOBSON, DANIEL G	
ART UNIT	PAPER NUMBER
2613	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/567,374	ANDRONI ET AL.	
	Examiner	Art Unit	
	DANIEL G. DOBSON	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) *1-21 and 38* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-37 and 39-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 22-33, 41, and 42 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 22-33, 41, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 7,221,873 B1 to Bock et al. in view of U.S. Patent Application Publication 2003/0163555 A1 to Battou et al. and U.S. Patent Application Publication 2004/0015614 A1 to Tonietto et al.

As to **Claim 22**, *Bock* discloses a network node structure for an optical communications network (Fig. 3, Optical Add/Drop Multiplexer), comprising:

at least one first card (Fig. 3, OADM R1) having an optical input (Input from line west at OLI (optical line interface)) for receiving an input WDM optical signal from an optical line of the network (OLI receives the WDM signal and passes it to the first card), a first optical device for extracting at least one component optical signal at a wavelength from the input WDM optical signal (tunable filters and optical circulator select the desired wavelengths to be dropped) and at least one optical output making available the at least one

component optical signal (the drop card has an output for wavelengths to be passed through, and an output for wavelengths to be dropped);

at least one second card, separate from the first card (optical transponders), each transponder has an optical input adapted to receive an input optical signal at a prescribed operating wavelength (each transponder has and input connected to the drop card and there is one transponder for each wavelength of the system), an optical output for transmitting to the add section a wavelength corresponding to the wavelength of the extracted component optical signal (the added wavelength must match the extracted wavelength or two signal of the same wavelength would interfere with each other); and

at least one first optical waveguide connected between the at least one optical output of the first card and optical input transponder for feeding to the optical input of transponder the extracted component optical signal (the dropped wavelengths are connected by patch-cords or the optical crossconnect to their respective transponders.)

Bock does not expressly disclose the details of the transponders and switches or a housing system for the network node.

Tonietto discloses a at least one second card (Fig. 1, 100) , having at least one socket mechanically and electrically adapted (Fig. 3, connector 310) to receive one of a plurality of interchangeable electro-optical components (Fig. 1, 102A, high speed bit stream interface module is intended to connect to the card (100) via a universal interface much like the XFP standard where the whole point

is to provide interchangeable components without having to change the entire card), each component having an optical input adapted to receive an input optical signal (Fig. 1, line interface 1), an optical-to-electrical conversion unit for converting the received optical signal into a corresponding converted electrical signal (Fig. 3, 302, 304, 306), an electrical output making available the converted electrical signal (Fig. 3, connector (310) to interface with the host card), and an electrical input adapted to receive an input electrical signal (Fig. 3, connector (310)), an electrical-to- optical conversion unit for converting the received electrical signal into a corresponding optical signal (Fig. 3, 312, 314, 316), an optical output making available the converted optical signal (Fig. 1, line interface 1), a selected electro-optical component of said plurality of components being plugged into the socket (Fig. 1, the component is plugged into the board via the connector in Fig. 3), an electronic circuitry in bi-directional communication relationship with said at least one socket for treating the converted electrical signal provided by said selected electro- optical component (Fig. 1, 104A, ASIC communicates the bidirectional signals and passes them to/from the backplane.)

Battou discloses a housing (Fig. 21, OTS chassis) having a plurality of slots (Fig. 21, plurality of slots for plurality of transponders (OA_IN, OA_EG) and mux/demux modules (TP_IN, TP_EG.))

Battou further discloses wherein the at least one second card (Fig. 15, Access Line Interface) further includes a control unit (Fig. 15, 1544, control FPGA) and a dynamically configurable electronic switch (Fig. 15, FPGA (1540)

and SONET framer (1510) perform time switching of 4 Gigabit Ethernet signals into 1 added wavelength and space switching of 1 dropped wavelength to 4 Gigabit Ethernet signals), wherein the control unit is configured to program the electronic switch according to a number of predetermined switch configurations (¶ 178, 181, round-robin or weighted round-robin settings may be used) and based on instructions received from an external device (Fig. 15, connection to line card manager (LCM), ¶ 181, controller receives control information from the LCM.)

Bock, *Tonietto*, and *Battou* are from the same art with respect to optical communications, and are therefore analogous art.

At the time of the invention, it would have been obvious to use transponders as disclosed by *Tonietto* in place of the transponders disclosed by *Bock*. The suggestion/motivation would have been to provide transponders where the opto-electronic components are readily changeable according to the desired connection format. It would have also been obvious to mount the first card disclosed by *Bock* (drop board) and the transponders (second cards) disclosed by *Bock* and *Tonietto* in the chassis as disclosed by *Battou*. The suggestion/motivation would have been to efficiently route the patch-cords connecting the cards. Which especially becomes a problem as the size of the system grows. It would have further been obvious to include an electronic switch disclosed by *Battou*, the suggestion/motivation would have been to provide an

interface for non-compliant signals and aggregation of legacy communication (¶¶ 175, 177.)

As to **Claim 23**, *Bock* discloses on one of said plurality of cards, a second optical device having at least two optical inputs (Fig. 1, add multiplexer (1:4 multiplexer and 1:2 coupler, having an input for each add transponder), each one adapted to receive a respective input optical signal comprising at least one component optical signal of an output WDM optical signal made available at an optical output of the second optical device to the optical line of the network (each input receives the signals to be added to the output on line west), the second optical device combining the input optical signals into the output WDM optical signal (signals to be added are combined with the "pass through" signals at the 1:2 coupler and put out on the line west), and at least one second optical waveguide connected between one of the at least two optical inputs of the second optical device and the optical output of the selected electro- optical component (the add multiplexer is connected by either patch-cords or optical crossconnect to the transponders with selected electro-optical components (*Tonietto*)), for delivering to the second optical device the component optical signal generated by the electro-optical conversion of the input electrical signal operated by the selected electro-optical component (the add signals are passed to the add multiplexer (second optical device.)

As to **Claim 24**, it is well known in the art to loop back the dropped optical signal in the OEO circuitry of the transponder to make a regenerator. Therefore,

it would have been obvious to use the ASIC disclosed by *Tonietto* to input the electrical signal to the optical transmitter that is the converted electrical signal from the receiver. The suggestion/motivation would have been to make a regenerator without using different type of card, thereby increasing the flexibility of the node.

As to **Claim 25**, it is well known in the art to add a client signal to a network via transponders disclosed by *Bock*. Therefore, it would have been obvious to input a client signal of a local client as the input electrical signal. The whole point of add/drop nodes in a ring are to aggregate signals and deliver them to their desired destination.

As to **Claim 26**, *Bock* discloses the first optical device comprises an optical de-multiplexer for de-multiplexing the input WDM optical signal into a plurality of component optical signals, the at least one optical output of the first card comprising a plurality of optical outputs each one making available one of the plurality of component optical signals (Fig. 3, drop module has a 1:4 demultiplexer for routing each of the dropped signals to the transponders); and

the second optical device comprises a multiplexer for multiplexing the component optical signals into the output WDM optical signal, the at least two optical inputs of the second optical device comprising a plurality of optical inputs, each one being adapted to receive a respective component optical signal (Fig. 3, shows that the add device has an 4:1 multiplexer for routing each of the added signals to the output line, thus becoming part of the output optical signal.)

As to **Claim 27**, *Bock* discloses wherein said second optical device is provided on the first card (Fig. 3, second optical device (add multiplexer) is on the first card (OADM-R1 board.))

As to **Claim 28**, *Bock* discloses that it is desirable to separate the drop function and the add function onto separate boards. It would have been obvious to apply this reasoning further to the system disclosed by *Bock* and have another card distinct form the first and second cards. The suggestion/motivation would have been to avoid any single point of failure.

As to **Claim 29**, *Bock* discloses the optical line of the network comprises a first optical line coupled to the optical input of the first card (Fig. 3, line west interface to the drop module of the OADM-R1 drop board) and a second optical line coupled to the optical output of the second optical device (Fig. 3, add module of the board coupled to the line west output, a second optical line.)

As to **Claim 30**, it is well known in the art to loop back the dropped optical signal in the OEO circuitry of the transponder to make a regenerator. Therefore, it would have been obvious to use the ASIC disclosed by *Tonietto* to input the electrical signal to the optical transmitter that is the converted electrical signal from the receiver. The suggestion/motivation would have been to make a regenerator without using different type of card, thereby increasing the flexibility of the node.

As to **Claim 31**, when looped back at the ASIC, the received signal is regenerated by the tia and reshaped and retimed by the signal condition circuitry achieving 3R regeneration (Fig. 3.)

As to **Claim 32**, *Tonietto* discloses interchangeable electro-optical components (Fig. 1, 102A, B, and C) and recognized the desirable characteristics of the XFP specification. One of those is the desire for hot pluggable components. It would have been obvious to use hot pluggable/unpluggable components. The suggestion/motivation would have been to be able to swap components without turning down the rest of the system.

As to **Claim 33**, *Tonietto* discloses interchangeable electro-optical components (Fig. 1, 102A, B, and C) and recognized the desirable characteristics of the XFP specification. While not conforming to the specification, *Tonietto* recognizes its teaching. It would have been obvious to use transceivers complying with the XFP standard. The suggestion/motivation would have been to use common parts available from multiple sources.

As to **Claim 41**, *Tonietto* discloses wherein the electronic circuitry of the at least one second card further comprises an electrical multiplexing/de-multiplexing electronic component, adapted to receive two or more converted electrical signals at a first bit rate, coming from corresponding sockets, to multiplex the two or more converted electrical signals into an aggregated electrical signal at a second bit rate higher than the first bit rate, to be provided to a corresponding socket, and, dually, adapted to receive an electrical signal at the second bit rate

and to de-multiplex it into two or more electrical signals at the first bit rate (Fig. 5A, ¶¶ 63-4.) The suggestion/motivation would have been to process the high speed data in a parallel format to allow the processing circuitry to handle the full payload at a slower clock rate.

As to **Claim 42**, *Bock*, *Tonietto*, and *Battou* disclose a network node as discussed in the rejection for claim 22. *Bock* discloses that the node is used in an optical communications network (Fig. 1.)

4. Claims 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 7,221,873 B1 to Bock et al., U.S. Patent Application Publication 2003/0163555 A1 to Battou et al., and U.S. Patent Application Publication 2004/0015614 A1 to Tonietto et al., as applied to claim 22 above, and further in view of U.S. Patent Application Publication 2004/0076168 A1 to Patenaude.

As to **Claim 34**, *Tonietto* discloses wherein said second card has at least a second socket (Fig. 1, 102B), a selected second electro-optical component of said plurality of components being plugged into the second socket (Fig. 3, 102B, the selected component is plugged into the card via connector (310.)) Data is then passed off the back plane for switching.

Patenaude discloses a ring with add/drop multiplexers (Fig. 3) and that network side traffic and client side traffic is typically optical and can be one of any selectable rates (¶ 11.)

At the time of the invention, it would have been obvious for a person of ordinary skill in the art to route the signals from the first socket to the second

socket in the system disclosed by *Tonietto*. The suggestion/motivation would have been to make an optical connection to client side equipment with existing line cards.

As to **Claims 35 and 36**, the client side traffic is separate from the network traffic, leaving the network administrator to select whichever wavelength is desired. As a matter of design choice, a wavelength that is the same as those used on the network traffic may be selected or one that is different.

At the time of the invention, it would have been obvious for a person of ordinary skill in the art to select a second optical component for use in the second slot (disclosed by *Tonietto*) that is same or different that wavelengths of the other optical signals.

5. Claims 37, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 7,221,873 B1 to Bock et al., U.S. Patent 6,809,258 B1 to Dang et al., and U.S. Patent Application Publication 2004/0015614 A1 to Tonietto et al., as applied to claim 22 above, and further in view of U.S. Patent Application Publication 2004/0258058 A1 to Heston et al.

As to **Claim 37**, *Heston* discloses a configurable electronic switch (Fig. 3, 316) for routing the converted electrical signal received from the at least one socket toward the electronic circuitry (Fig. 3, data is passed from the optical ports (308) to the switch (316) and on the circuitry (320)) and for routing the converted electrical signal treated by the electronic circuitry toward the socked (Fig. 3, data from the circuitry (320) is passed through the switch (316) to the optical ports.)

At the time of the invention, it would have been obvious for a person of ordinary skill in the art to use a switch between the socket and circuitry disclosed by *Tonietto*. The suggestion/motivation would have been to allow aggregation of multiple signals into one higher rate signal.

As to **Claim 39**, *Heston* discloses wherein the second card comprises an electrical connection arrangement between the control unit and the socket (¶ 34, the card determines what rate is being received to control the mapping and the switches) and in which the control unit is capable of detecting the presence of an electro-optical component in the socket (*Tonietto*, ¶ 67, Fig. 5B) and to automatically configure the electronic switch according to one of a number of predetermined switch configuration patterns (*Heston*, ¶ 34, 42, 43.)

As to **Claim 40**, *Tonietto* discloses wherein the electronic circuitry is capable of monitoring characteristic parameters of the converted electrical signal so as to asses a level of communication performances, said characteristic parameters being communicated to the control unit (¶¶ 66-7, module not ready and RX_ LOS are determined based on the converted electrical signal.)

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL G. DOBSON whose telephone number is (571)272-9781. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel G. Dobson/
Examiner, Art Unit 2613
03/12/2009

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613